



Effect of different dietary N-3 long-chain polyunsaturated fatty acids levels on stress response of meagre (*Argyrosomus regius*, Asso 1801) juveniles

Carvalho, Marta ; Montero, Daniel; Gesto, Manuel; Lencina, Ana ; Lund, Ivar; Izquierdo, Marisol

Publication date:
2018

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Carvalho, M., Montero, D., Gesto, M., Lencina, A., Lund, I., & Izquierdo, M. (2018). *Effect of different dietary N-3 long-chain polyunsaturated fatty acids levels on stress response of meagre (Argyrosomus regius, Asso 1801) juveniles*. Abstract from International Symposium on Fish Nutrition and Feeding, Las Palmas, Spain.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.



EFFECT OF DIFFERENT DIETARY N-3 LONG-CHAIN POLYUNSATURATED FATTY ACIDS LEVELS ON STRESS RESPONSE OF MEAGRE (*ARGYROSPOMUS REGIUS*, ASSO 1801) JUVENILES

Ms. Marta Carvalho *Grupo de Investigación en Acuicultura (GIA), Instituto Universitario Ecoaqua, Universidad de Las Palmas de Gran Canaria* **Dr. Daniel Montero (1)** **Dr. Manuel Gestó** *Technical University of Denmark, DTU Aqua, Section for Aquaculture, The North Sea Research Centre* **Ms. Ana Lencina**
(1) Dr. Ivar Lund *Technical University of Denmark, DTU Aqua, Section for Aquaculture, The North Sea Research Centre* **Dr. Marisol Izquierdo (1)**

This study aimed to determine the effect of different dietary levels of n-3 LC-PUFA on stress response of juveniles of meagre, a novel species for European Aquaculture.

Fish of 2.8 ± 0.23 g IBW were fed 5 experimental diets with increasing n-3 LC-PUFA levels (0.8, 1.4, 2.0, 2.6 and 3.6% DM) during 90 days. The largest growth was obtained in fish fed 1.4-2.6% LC-PUFA. At day 66th of feeding, juveniles fed diets 0.8, 1.4 and 2.6% were allocated in 9 tanks of 200L (density of 10 fish tank⁻¹) and exposed to an episodic water level reduction. At day 90, juveniles fed diets 1.4-3.6%, were distributed in 18 tanks of 500L tanks (density of 6 fish tank⁻¹), and were confined in 2 cages (3 fish cage⁻¹) during 7 days.

In the first stress challenge, there were no significant differences in basal cortisol levels, which were only slightly increased after 1h of stress irrespective of the diet. However, 1h after stress, fish fed 1.4% n-3 LC-PUFA showed lower plasma glucose levels as well as lower plasma lactate. Additionally, fish showed maximum levels of 5-HIAA 1h after stress. The 5-HIAA/5-HT ratio increased significantly 1h after stress in meagre fed 0.8 and 1.4% diets whereas in meagre fed 2.6% n-3 LC-PUFA this ratio was unaffected.

In the second challenge, plasma cortisol levels showed a global increase 2h after stress, with fish fed 1.4 and 2.0% n-3 LC-PUFA showing the highest cortisol levels, and recovering to basal levels after 7 days. Regarding cat gene expression, fish fed 1.4% presented the highest expression 2h after confinement. After 7 days of prolonged stress, fish fed 2.0% diet showed lower cat expression than fish fed 3.6%. Additionally, a global increase in gpx expression was observed 2h of confinement. After 7 days, fish fed 2.0% and 2.6% diets presented significant lower gpx expression than fish fed 3.6%.

The results of this study confirmed growth and metabolic responses of previous studies that suggested a requirement of about 2.0% DM n-3 LC-PUFA for this species, and denote that this level is also required to improve resistance to acute and prolonged stress in meagre juveniles.